What is claimed is:

5

10

15

Apassive touch system comprising: 1.

a passive touch surface;

at least two cameras associated with said touch surface, said at least two cameras acquiring images of said touch surface from different locations and having overlapping fields of view; and

a processor receiving and processing images acquired by said at least two cameras to detect the existence of a pointer therein and to determine the location of said pointer relative to said touch surface.

A passive touch system as defined in claim 1 wherein said at least two 2. cameras are two-dimensional image sensor and lens assemblies having fields of view looking along the plane of said touch surface.

3.

A passive touch system as defined in claim 2 wherein said processor determines the location of said point relative to said touch screen using triangulation.

A passive touch system as defined in claim 3 wherein said processor determines when the pointer is in contact with said touch surface and when said pointer is hovering above said touch surface.

A passive touch system as defined in claim 2 wherein said processor 5. selects pixel subsets of images acquired by said image sensor and lens assemblies and processes said pixel subsets to determine the existence of said pointer.

A passive touch system as defined in claim 5 wherein said pixel subsets are determined duling an alignment routine.

7. A passive touch system as defined in claim 2 wherein said processor includes a digital signal processor associated with each image sensor and lens assembly and a master digital signal processor in communication with the digital signal processors associated with each image sensor and lens assembly, the digital

30

25

signal processors associated with each image sensor and lens assembly selecting the pixel subsets and processing the pixel subsets to determine the existence of said pointer, the master digital signal processor receiving pixel characteristic data from the digital signal processors associated with each image sensor and lens assembly and triangulating the pixel characteristic data to determine the location of said pointer relative to said touch surface.

Suby

8. A passive touch system as defined in claim 7 wherein said pixel characteristic data includes a median line of the pointer.

10

9. A passive touch system as defined in claim 8 wherein said pixel characteristic data is packaged by the digital signal processors associated with each image sensor and lens assembly into pointer information packets (PIPs).

15

10. A passive touch system as defined in claim 9 wherein said master digital signal processor polls the digital signal processors associated with each image sensor and lens assembly for the PIPs at a rate less than the rate at which said image sensor and lens assemblies acquire images.

11. A passive touch system as defined in claim 7 including an image sensor and lens assembly adjacent each corner of said touch screen.

1=

25

A passive touch system as defined in claim I further including a computer coupled to said master digital signal processor, said computer receiving pointer location data from said master digital signal processor and processing the same.

50b

13. A method of detecting the position of a pointer relative to a passive touch surface comprising the steps of:

30

acquiring images of said touch surface from different locations using cameras having overlapping fields of view; and

processing said images to detect the existence of a pointer therein and to determine the location of said pointer relative to said touch surface.

25

- 14. The method of claim 13 wherein during said acquiring step, said images are acquired using two-dimension image sensor and lens assemblies having fields of view looking along the plane of said touch surface.
- 5 15. The method of claim 14 wherein during the processing step, the location of said pointer relative to said touch screen is determined using triangulation.
 - The method of claim 15 wherein during said processing step, the images are processed to determine when said pointer is in contact with said touch surface and when said pointer is hovering above said touch surface.
 - 17. The method of claim 16 further comprising the step of selecting pixel subsets of images acquired by said image sensor and lens assemblies prior to processing said images.
 - 18. The method of claim 17 wherein during said processing step the existence of said pointer is determined by calculating median lines of the pointer and wherein the location of said pointer is determined by calculating the intersection point of median lines and using triangulation to determine the coordinates of said intersection point.

20

10